

COMPUTER REQUIREMENTS FOR TSI® FMS SOFTWARE

APPLICATION NOTE CC-113 (US)

Introduction

It is critical that a GMP environmental monitoring system operates in a reliable and stable manner. Uninterrupted data collection must be the number one priority in any monitoring system design philosophy. This means a stable software package (FMS Software) and quality computer components are a requirement.

FMS Software is broken down into three primary elements—the monitor, clients, and a database. All three can reside on the same computer or on different computers. Regardless of the topology chosen, good, quality computers are important to maintain the performance vital in life science and electronic markets. For additional information on different system application recommendations, please see TSI's Application Note CC-114, "*Facility Monitoring System Design Recommendations*".

This application note provides minimum computer specifications for FMS Software.

Minimum Computer Requirements

Minimum computer requirements for computers operating any combination of FMS components including the **Monitor** or **Database** (i.e. Monitor, Database, and Client reside on one computer):

- 4 GB of RAM Memory (additional 2 GB of RAM for each additional Monitor added)
- *Minimum* CPU dual core processor (physical or virtual) running at a minimum clock speed of 2.1 GHz or better [*Recommended* CPU quad core processor (physical or virtual) running at a minimum clock speed of 2.5 GHz or better]
- 500 GB Hard drive space
 - For data integrity, consideration should be given to installing dual hard drives that are mirrored (RAID 1) on the computer where the database resides
- Operating Systems (32- and 64-bit): Windows Server® 2008 R2, Windows Server® 2012 R2, Windows® 7 (professional or above), Windows® 8 (professional or above)
- Min Screen Resolution should be at least 1152 x 864 to view all Client dialogs
- Common programs such as the SQL Database, Monitor and Buddy Monitor must be available to the Monitoring LAN and the End User LAN. Since the computer with these programs installed



on it requires a connection to two networks simultaneously, the computer needs to have either two network interface cards or a dual network interface card.

Minimum computer requirements for computers operating a **Client Only**:

- 4 GB of RAM Memory
- CPU dual core processor running at a minimum clock speed of 1 GHz or better
- 80 GB Hard drive space
- Operating Systems (32- and 64-bit): Windows Server® 2008 R2, Windows Server® 2012 R2, Windows® 7 (professional or above), Windows® 8 (professional or above)
- Minimum Screen Resolution should be at least 1152 x 864 to view all Client dialogs

Conclusion

TSI strongly recommends that stable computers are sourced. These computers should be built with quality components that are known to work with each other. The computer vendor will have tested the computer prior to delivery and must provide supporting documented test evidence.

The computers sole purpose should be FMS. Often, buying a computer from a vendor will come with pre-loaded programs. TSI recommends that the computer has a clean installation of the operating system, i.e., no preloaded programs on the computer. Keeping additional programs to a minimum is important, as alternate programs can degrade a computer's performance and potentially adversely impact FMS. A quality, dedicated computer is the great step toward ensuring a good, robust FMS System.



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